

The Canadian Entomologist

LXX.

ORILLIA

THE LAUXANIIDAE (DIPTERA) OF SOUTHERN QUEBEC AND ADJACENT REGIONS.

BY G. E. SHEWELL.

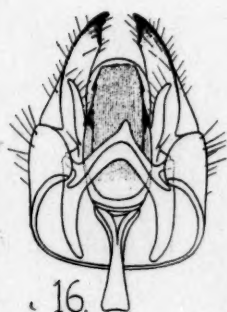
Ottawa, Ont.

(continued from page 110)

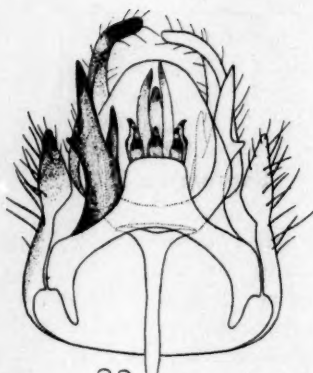
Sapromyza Fallen.

KEY TO SPECIES.

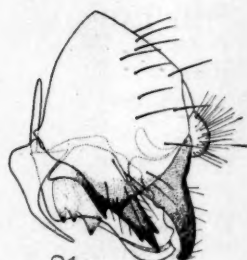
1. Thorax without dark vittae just mesad of the dorsocentral bristles; frons and scutellum also lacking dark vittae 2
- Thorax with two distinct dark vittae mesad of the dorsocentrals, these vittae continued onto the scutellum; frons with similar vittae 4
2. Shining yellow species; thorax with two pairs of dorsocentrals; wings hyaline; abdomen with a round shining black spot on each side of the last 2 or 3 tergites. (Fig. 24) *rotundicornis* Loew.
Black or dark species; thorax with three pairs of dorsocentrals 3
3. Frons shining black, especially on orbits, conspicuously reddish testaceous on anterior margin; thorax faintly gray pruinulent; the acrosticals in four series between anterior dorsocentrals; abdomen shining black; arista pubescent (Fig. 33) *hyalinata* Meigen.
Frons opaque, brownish-pruinulent, indistinctly reddish on anterior margin; thorax opaque, brownish pruinulent, two light grayish pruinulent vittae between the dorsocentrals and the acrosticals, the latter in two rows; abdomen grayish pruinulent; arista nearly bare (Fig. 34) *fusca* n. sp.
4. Fore femur without a comb-like series of minute setulae between middle and apex on anteroventral surface; eighth abdominal tergite of male with slender pointed processes on its lateral edges or at least with distinct angularity at its posterolateral corners; male genital structures robust; bristles on posterior margins of abdominal tergites not set in fuscous spots 5
Fore femur with a comb-like series of minute setulae on anteroventral surface; eighth tergite of male without processes on its lateral edges; male genital structures usually quite small, if rather large, the bristles on posterior margins of abdominal tergites are set in fuscous spots 9
5. The heavily chitinated ventral plate behind the 5th sternite of the male bears two slender backwardly-directed processes on its posterior margin .. 6
The ventral plate behind the 5th sternite of the male bears a central broad, blunt, backwardly-directed process on its posterior margin 7
6. Superior forceps of male hypopygium long, not very slender, inner margins on apical third serrate, from base to tip more or less evenly curved forward and inward beneath the other structures, tips rounded, almost entire outer surfaces shining black *serrata* Malloch
Superior forceps of male hypopygium shorter, rather evenly tapering, inner margins not serrate but with a distinct angle at the distal third, not evenly



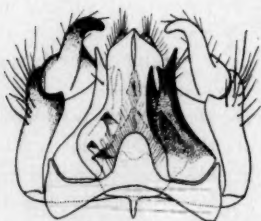
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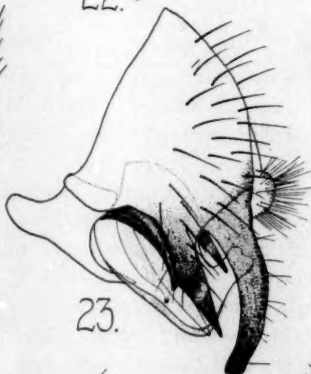
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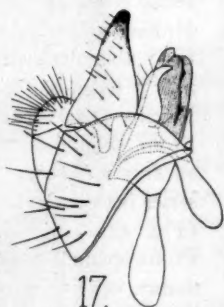
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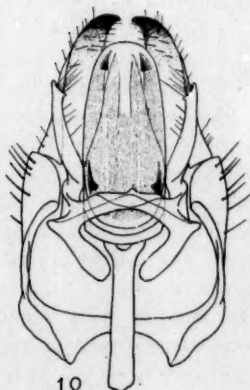
20.



23.



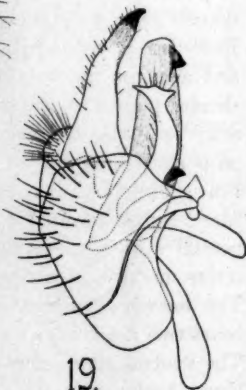
17.



18.



24.



19.

- curved forward and inward, only the tips rather abruptly curved, outer surfaces shining black only towards the tips (Figs. 31, 32) .. *currani* n. sp.
7. Eighth tergite of male with slender pointed processes at its posterolateral angles 8
Eighth tergite of male without slender processes, but with distinct angularity at these points (Figs 20, 21) *aspinosa* n. sp.
8. Superior forceps of male hypopygium short, stout, much shorter than the 8th tergite measured opposite their bases, coarsely serrate at the tips (Figs. 29, 30) *subserrata* n. sp.
Superior forceps of male hypopygium very long and slender, as long as the 8th tergite measured opposite their bases, blunt at the tips, not serrate (Figs. 22, 23) *novaescotiae* n. sp.
9. The bristles on the posterior edges of the abdominal tergites arise from fuscous spots, usually other small spots at the bases of some of the bristles anterior to them; all femora and tibiae maculated 10
The bristles on the posterior edges of the abdominal tergites do not arise from fuscous spots, the maculations of the abdomen confined to two large lateral spots on tergite 2 and four large spots on each of tergites 3 to 6; fore and middle femora and tibiae not maculated (Fig. 25, 26)
..... *spatulata* n. sp.
10. Superior forceps of male hypopygium more than twice as long as their width at the base in lateral view, gradually tapering, slightly bent forward and inward from the middle, the tips distinctly incurved and hooked (Figs. 18, 19) *browni* Curran.
Superior forceps of male hypopygium less than twice as long as their width at the base in lateral view, not bent in the middle, the tips not hooked (Fig. 16, 17) *ouelleti* n. sp.

***Sapromyza fusca* n. sp.**

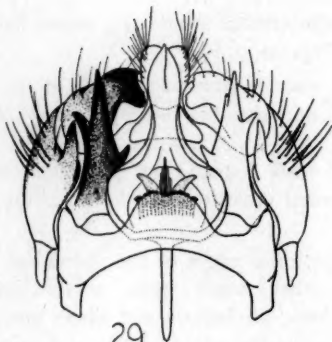
(Fig. 34)

Male: Ground color dark brown; head broader than thorax at humeri; frons opaque, brownish pruinose, especially on the frontal plates, around the ocellar triangle and along the margins of the eyes grayish pruinose in some lights, above the antennal bases narrowly reddish; face retreating, grayish pruinose, parafacials and cheeks with a silvery sheen, the latter about one-third the eye height, two reddish brown lines appear in some lights, dividing the face from the parafacials; two dark brown bars from antennal pits to eyes; oral margin quite noticeably produced, narrowly dull reddish on the rim; clypeus dark brown and prominent; mouthparts dark brown, palpi black; antenna and arista dark brown, the latter nearly bare; occiput gray pruinose, silvery between the paracphalic sutures.

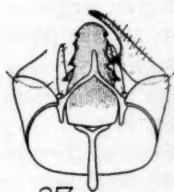
Thorax with three pairs of dorsocentrals all behind the suture; acrostical hairs strong, in two rows, slightly closer to each other than to dorsocentrals; coloration as follows; anteriorly, including the humeri, between the acrostical and dorsocentral row on each side, on the disk of the scutellum, and on the pleura gray (very faintly brownish) pruinose, elsewhere brownish pruinose, halteres brownish, the knobs subshining. Abdomen grayish pruinose including



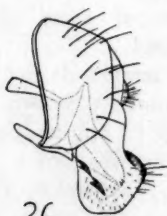
25.



29.



27.



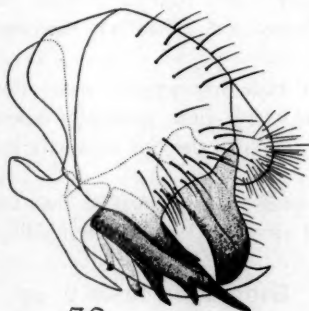
26.



28.



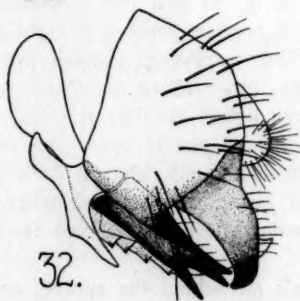
33.



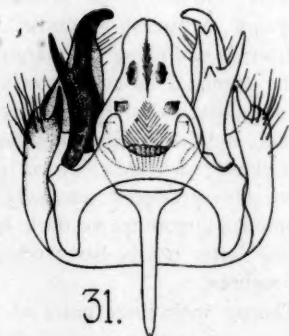
30.



34.



32.



31.

genital segments; eighth abdominal tergite not very large, its posterolateral corners normally directed downward, rounded, without processes; cerci very small, not visible in lateral view; superior forceps very small, also normally concealed, consisting of two shining black, closely appressed, anteriorly curved processes; penis entirely chitinous, dark brown (See Fig. 34). Legs uniformly dark brown, the femora distinctly, the tibiae faintly grayish pruinose; middle and hind tarsi slightly paler but not yellow.

Wings a little more than twice the length of the abdomen, faintly luteous, the bases reddish brown, the veins dark brown. Length $3\frac{1}{2}$ -4 mms.

Female: Differs only sexually.

Holotype, ♂, Hemmingford, Que., March 17th, 1927, (G. H. Hammond). The specimen was labelled *S. brachysoma* Coq. and was lent to me by Dr. Curran. It seems unlikely to be *brachysoma*, differing, as it does, quite radically from Coquillett's description of that species¹. Type returned to Dr. Curran.

Allotype, ♀, Wabamun, Alta., May 8th, 1932, (E. H. Strickland), No. 4298, Canadian National Collection, Ottawa.

Paratypes, ♂ ♂, Edmonton, Alta., May 16th, 1924, May 19th, 1937, (E. H. Strickland). ♀, Brockville, Ontario, Oct. 29th, 1903, (W. Metcalfe), all in the National Collection.

Group *Sapromyza annulata* Melander

Comb of setulae present on the fore femora; male hypopygium small or of medium size.

***Sapromyza ouelleti* n. sp.**

(Figs. 16, 17)

The frontal and thoracic vittae, maculations of the abdomen and legs and other superficial characters are the same as in *browni* Curr. (See Curran's description (5)). Male genital structures of medium size, the eighth tergite very similar in size and shape to *browni*, without processes on its lateral edges; the superior forceps about one-third shorter than in *browni*, less than twice as long as their basal width, when viewed laterally, normally not with a slight bend forward in the middle, though often becoming curved and buckled forward and inward in dried specimens, the tips not hooked; inferior forceps curved anteriorly towards the apex, broadest at the base, their sides not parallel, with a distinct, bristle-bearing angle near the base anteriorly; the proximal pair of chitinous hooks on the ventral surface of the penis distinctly more than half way from its base.

Holotype, ♂, Sully, Que., June 24th, 1936, (J. Ouellet). (Genitalia mounted separately), No. 4253, Canadian National Collection, Ottawa.

Allotype, ♀, Same locality, July 1st, 1936, in the Canadian National Collection.

Paratypes, ♂ ♂, Harrington Harbor, Que., July 4th, 1929, (W. J. Brown). (In Ouellet Collection). Agassiz, B. C. (Genitalia mounted separately. In the American Museum of Natural History). Lethbridge, Alta., June 7th, 1927, (H. E. Gray). (In the Dept. of Entomology, Macdonald College, Que.). Kazubazua, Que., Aug. 17th, (G. S. Walley); Kaslo, B. C. May 19th, (A. A.

(1) Canadian Entomologist, Vol. 30, p. 278, 1898.

Dennys); Salmon Arm, B. C., June 17th, (A. A. Dennys) (in the National Collection). ♀ ♀, Sully, Que., June 27th, 1936, (J. Ouellet) (In Ouellet Collection). Sully, Que., June 26th, 1936, (J. Ouellet). (In the American Museum of Natural History). Sully, Que., July 1st, 9th and 12th, 1936, (J. Ouellet), also one copulating pair from Sully (in the National Collection).

Note: In *browni* Curr., the posterior productions at the tips of the inferior forceps may sometimes be greatly elongated so that this structure appears the same as in *annulata* Mel. Similarly, there is sometimes a distinct angularity or slight process on the posterior edge of the same structure in *ouelleti*, near the apex, making it appear similar to *browni*. In these cases, the evidence of the shape of the superior forceps and penis must be considered as these structures appear to be very constant.

***Sapromyza spatulata* n. sp.**

(Fig. 25, 26)

Male: Ground color of head yellow, cinereous pollinose, more bluish pollinose on the ocellar triangle and lines joining the frontal and median vertical bristles, between the frontal bristles brownish yellow; the ferrugineous-yellow median vittae rather indistinct; a large crescent-shaped or subtriangular yellow area on the front above the antennal bases; cheeks with a brownish bar from the ventral edge of the eyes to the oral margin; proboscis and palpi pale reddish yellow; antennae yellow, arista brownish. Thorax distinctly and uniformly pale bluish pollinose as in *pictiventris* Mall., this blue tinge much more evident than in *browni* and *ouelleti*; the four thoracic vittae dark brown, almost blackish, the median pair evanescent before reaching the scutellum; disk of scutellum concolorous with the thorax, the median thoracic vittae continued on it rather faintly, its edge yellow; four pairs of dorsocentrals; acrostical hairs in four rows.

Abdomen pale yellow, faintly cinereous pollinose; second segment with two large lateral brownish spots, third to sixth segments each with four large spots.

Hypopygium small; superior forceps short, spatulate, the tips slightly incurved and bearing three or four minute teeth; penis and inferior forceps normally concealed, the latter thin, bladelike. Legs uniformly pale yellowish, the tips of the posterior femora anteriorly with a small brownish spot; squamae and halteres pale yellowish; wings without luteous tinge; length 2.5 mms.

Female: Unknown.

Type, ♂, Abbotsford, Que., June 2nd, 1937, (Shewell), No. 4254, Canadian National Collection Ottawa.

Paratypes, four ♂ ♂, June 4th, 1937, same locality. (One with genitalia mounted separately. One paratype deposited in the American Museum of Natural History, New York, and one in the Entomology Department, Macdonald College, Que.).

Group *Sapromyza quadrilineata* Loew.

Fore femora without the comb of setulae; hypopygium large.

***Sapromyza aspinosa* n. sp.**

(Figs. 20, 21)

Male: Ground color of head pale yellowish testaceous; front cinereous pollinose, the bluish tinge distinct, laterally along the margins of the eyes silvery white pollinose, the median vittae dark brown and broad, anterior edge above the

antennal bases sometimes yellowish; face faintly cinereous pollinose, latero-ventrally grayish, the parafacials silvery white pollinose; cheeks with dark brown spots between the eyes and oral margin; proboscis brownish yellow; palpi dark brown; antennae pale yellowish testaceous, arista slightly darker. Thorax cinereous pollinose, the four thoracic vittae dark brown, rather narrow, the median pair more or less evanescent at the acrostical bristles; acrostical hairs in two complete median rows and an incomplete row on either side of these; disk of scutellum concolorous with thorax, the edge pale sand-colored, vittae on the scutellum narrow, convergent posteriorly. Abdomen pale yellowish, maculations as in *spatulata*; eighth tergite without slender pointed processes laterally but with distinct angularity at these points; superior forceps rather short, slender at the tips which are abruptly curved inward; inferior forceps cleft towards apices, the lateral arms twice as long and strong as the mesal ones and bearing small processes half-way along on their mesal surfaces, two small processes on the ventral surfaces at the bases of the main arms; penis towards its tip half as wide as at its widest point in ventral view. Legs pale yellowish, the tibiae narrowly banded with dark brown just beyond the basal third. Halteres whitish yellow. Wings with faint luteous tinge. Length 3 mms.

Female: Differs only sexually.

Holotype, ♂, LaTrappe, Que., May 30th, 1936, (J. Ouellet). (Genitalia mounted separately) No. 4255, Canadian National Collection, Ottawa.

Allotype, ♀, same data.

Paratypes, Two ♂♂, four ♀♀, same data.

***Sapromyza subserrata* n. sp.**

(Figs. 29, 30)

Male and female: Coloration of head, thorax and legs and maculations of abdomen identical with those given for *spatulata*, except that in this species, the median thoracic vittae are usually somewhat broadened posteriorly and extend to the margin of the scutellum. The vittae on the scutellum are also broad and approximate. Length 3-3½ mms. Male hypopygium very large; the ventral plate with a broad blunt central process; eighth tergite with slender pointed processes on the posterolateral angles; superior forceps short, stout, the tips coarsely serrate; inferior forceps not cleft at apices, with stout central arms and two much smaller arms, a mesoventral one at the basal third and a lateroventral one at the distal third; penis abruptly constricted in the middle and pointed at the tip in ventral view.

Holotype, ♂, Abbotsford, Que., June 14th, 1937, (Shewell) No. 4256, Canadian National Collection, Ottawa.

Allotype, ♀, same data.

Paratypes, Three ♂♂, one ♀. Same data as types, also specimens of both sexes from LaTrappe, Covey Hill, Fairy Lake (nr. Hull), Que., and Norway Pt., Lake of Bays and Ottawa, Ontario. (Two with genitalia mounted separately. In the Canadian National Collection); Three ♂♂, three ♀♀, Lauzon and LaTrappe, Que., (J. Ouellet) (In Ouellet Collection); ♂, Abbotsford, June 11th, 1937, (Shewell) ♀, Ottawa, May 29th, 1925, (Curran) (In the American Museum of Natural History); Three ♂♂, three ♀♀, same data as types (One of each sex in the Dept. of Entomology, Macdonald College, Que., in the collection of the

University of Montreal and in the Entomological Laboratory, Hemmingford, Que.).

Note: The above species bears a superficial resemblance to *serrata* Malloch in its genital and other characters. The points of difference are that, in Malloch's species, the ventral plate bears two slender processes somewhat similar to the same structure in *currani* (Fig. 31), the processes of the eighth tergite arise from the anterolateral corners, the superior forceps are longer and almost entirely shining black, the inferior forceps are cleft towards the apices, the arms dissimilar in length but equal in thickness.

***Sapromyza currani* n. sp.**

(Figs. 31, 32)

Male: The unique type of this species is in too poor condition for an accurate description of the body coloration, but the pattern of the head, which is undamaged, the maculations of the legs and the genital structures, place it undoubtedly in this group, with close superficial resemblance to the above two species. Ventral plate of the hypopygium with two slender processes posteriorly; eighth tergite with pointed processes posterolaterally; superior forceps not serrate, rather evenly tapering, angulate at the distal third on the inner (posterior) margins, the tips abruptly incurved and blackened; inferior forceps cleft towards apices, the arms similar in length, the mesal arms more than twice as thick as the lateral ones and notched at their apices, two small processes arising on the ventral sides at the bases of the main arms; penis towards its tip nearly half as wide as at its widest point in ventral view. Length 3 mms.

Type, ♂, Aylmer, Que., July 18th, 1924. Collected by Dr. Curran. (Genitalia mounted separately). No. 4257, Canadian National Collection, Ottawa.

***Sapromyza novaescotiae* n. sp.**

(Figs. 22, 23)

Male: The unique type of this species is also in poor condition, but the superficial characters are apparently similar in every respect to the other species of the group. Ventral plate with a central broad, blunt, posterior process; processes at the posterolateral corners of the eighth tergite robust, blunt and nodulate at the tips; superior forceps very unusually long and slender, as long as the eighth tergite measured opposite their bases, blunt at the tips, not serrate; inferior forceps cleft at about half-way, the lateroventral arms more than twice as long and strong as the mesodorsal ones and bearing small processes on their lateroventral surfaces at the base; penis in ventral view nearly as broad as long, broadly rounded at the tip, not at all constricted in the middle. Length 3.5 mms.

Type, ♂, Kentville, N. S., July 9th, 1923, (R. P. Gorham), No 4258, Canadian National Collection, Ottawa. (Genitalia mounted separately).

(to be continued)

NEW CHRYSOPIDAE AND SPECIES NEW TO THE UNITED STATES.

BY NATHAN BANKS,

Cambridge, Mass.

In identifying Chrysopidae from the South and West I have come across some new species, a few specimens have been in the collection for years, but more specimens have shown their distinctness. Correction is made of a misidentifica-

tion in my Revision of the *Chrysopidae* and three Cuban forms have been taken in Florida.

A few years ago I realized that the number of cubital cross-veins beyond the divisory veinlet was fairly constant in each species: in our common *Ch. oculata* I have found it more constant than the shape of the divisory cell. In *oculata* and many of our species there are six cubitals; seven in *nigricornis*, *majuscula* and *chi* (*ypsilon*); eight to ten in *robustus* and *gravidula*. The length of the hair on the veins is also useful; in *oculata* very long, in *nigricornis*, *majuscula*, *coloradensis* very short.

The width of the postcubital area compared to the cubital is a valuable character, in some as *apache*, and *comanche* it is hardly broader than the cubital area; in most species much broader, in *furcata* almost twice as broad.

A curious venational character in *Chrysopa* is the fact that from the third cubital cell there goes two veinlets to the hind margin, while the fourth has but one, yet the fifth and sixth two each. Variations are rare, and in a South American species of which I have a dozen or more specimens the third cubital has but one branch, while the fourth, like those beyond, has two.

***Chrysopa comanche* sp. nov.**

This is the form of *C. plorabunda* group that occurs in the southern part of Texas, New Mexico, Arizona, and California. The very narrow wings are acute at tip, the venation wholly green, the face with a red mark each side under the eye, but in two lines divergent above, and the inner one extending up to inner edge of the eyes. Sometimes there is a dot or line of reddish each side on vertex by the eyes. The divisory veinlet ends before the cross-vein above, six cubital cross-veins beyond it, ten to eleven radial cross-veins, and only about five or six free branches to the radial sector, gradates about four and six in subparallel series. The post-cubital area is only a little broader than the cubital, thus the cells there are mostly not twice as high as long, the veinlets but little oblique; hair on veins moderately short.

Length of fore wing 11 to 12 mm.

From Laredo, Texas, others from Roswell, New Mexico; Yuma, Arizona; Prescott N. For., Arizona 20 June, and Los Angeles, California. Others are from other places in the same general area. Holotype M. C. Z. No. 23181 from Laredo, paratypes in Ohio State Mus. and M. C. Z.

It differs from *C. plorabunda* in lacking the black on the cheeks, in more narrow postcubital area, in shorter hairs on veins, etc. From *C. harrisi* in having the red on cheek divided and one part going up by side of eye, in less elongate wings and less oblique veins, with much fewer free branches of radial sector. *C. externa* Hagen was described from Washington, D. C., California, and Mexico. None of the types exist; I have therefore selected a neotype from the Eastern form, a specimen from Winter Park Florida, 31 Oct., where it is very common. This form sometimes has a red mark on the anterior lateral margin of pronotum. It differs from *C. comanche*, in broader wings, broader post cubital area, and the red on cheeks is one large spot, not divided, and only below the eye, just as in *C. harrisi*, and Hagen suggested it might be that species, which was then unknown to him. I and others have previously identified western specimens

of *C. comanche* as *C. externa*, but since there are three or more Western forms which have this type of divisory veinlet, I think it is best to keep *C. externa* for the eastern form and which fits his description.

***Chrysopa mohave* sp. nov.**

Head pale greenish, cheeks with two reddish lines united below (much as in *furcata* but not black); rest of body, antennae, and legs pale, unmarked, palpi pale, no dark marks; basal joint of antennae short and strongly convex on inner side; pronotum about as long as broad, somewhat narrowed in front. Wings with mostly greenish venation, the gradates and several cross-veins toward base dark, the inner ends of many costals, and each end of the radial and cubital cross-veins dark, also the base of radial sector; stigma pale greenish; in the hind wings the venation greenish, but gradates and ends of some of the cross-veins as in fore wing are faintly dark.

Fore wings rounded at tip, hind wings hardly pointed; both rather slender. In fore wings the divisory veinlet ends a little beyond the cross-vein above, six cross-veins beyond the divisory; third cubital cell rather broad, two branches to hind margin, and one from the next cell; post-cubital space not twice as wide as cubital space; seven or eight gradates in two parallel series, inner about one-half way between outer and radial sector; hairs on veins moderately long.

In hind wings three or four gradates in inner row and five or six in outer row, nine radial cross-veins. Hind tibiae very long and slender, not at all swollen.

Length of fore wing—13 mm.

From Claremont and Stanford Univ., Calif. and Chiricahua Mts. Ariz. (Beamer coll.). Holotype M. C. Z. No. 23182; Paratypes in R. C. Smith coll. and M. C. Z.

Differs from *furcata* in unmarked palpi, and especially in the shape of the basal joint of antennae, in *furcata* these are long, the sides nearly parallel, not swollen on inner side; also in *furcata* the hind tibiae are plainly swollen.

***Chrysopa apache* sp. nov.**

Head pale; a curved dark band above the clypeus, a dark brown spot between the antennae, and a red or brownish triangle more or less evident on the vertex; palpi marked with black; antennae with the basal joint pale, with a dark stripe on the outer side, rest of antennae black or dark toward tip; pronotum twice as broad as long, a broad dark stripe on each lateral margin; mesonotum with a large dark spot above base of fore wings; abdomen dark, with some pale spots above; legs pale, mid and hind femora with a broad dark band, the tibiae narrowly dark at base and tip.

Wings with largely black or dark venation, the subcosta for most of length, the radial sector, and most of medius and cubitus dark; radius pale, and some pale on cubitus and anals toward base; stigma slender, yellowish; in hind wings veins mostly dark, but paler than fore wings, stigma pale. Wings rather slender, tips pointed. In fore wings nine radial cross-veins; divisory cell long and ends a little beyond the cross-vein above; third cubital cell longer than second and rather broad, two branches to the hind margin, and one from the next cell; six cubital cross-veins beyond the divisory; two or three inner gradates, five or six outer ones, in parallel rows, and inner one nearer to outer than to radial sector;

post-cubital space hardly any broader than the cubital area; hair on veins quite short hardly noticeable.

In hind wings eight radial cross-veins; two or three inner and four or five outer gradates; hind tibia long, very slightly swollen, nearly twice as long as the mid tibia.

Length of fore wing 12 mm.

From Globe, Ariz. 27 June (Parker), Davis Mts., Texas 2 June (J. N. Knull), Palmerlee, Ariz (Biederman), and 25 miles from Sells, Ariz. (Painter).

Holotype M. C. Z. No. 23183 from Globe; paratypes in Prof. R. C. Smith's coll., Ohio State Mus. and M. C. Z.

There are now five species in this section of those with some longitudinal veins partly black.

They can be tabulated as follows:—

- | | |
|---|-------------------|
| 1. Antennae black near base | 2 |
| Antennae wholly pale | 3 |
| 2. Subcosta, radius, and most of radial sector pale; seven cross-veins beyond | |
| divisory | <i>nanina</i> . |
| Subcosta and radial sector dark; six cross-veins beyond end of divisory vein- | |
| let | <i>apache</i> . |
| 3. Two submedian dark stripes on pronotum, extending back over mesonotum; | |
| radial sector and gradates dark; six cubital cross-veins beyond divisory | |
| | <i>luctuosa</i> . |
| Pronotum with broad marginal dark stripes; radial sector largely pale | 4 |
| 4. Body broad and stout; most of cubital and radial cross-veins dark in middle; | |
| nine cubitals beyond the divisory; palpi largely pale | <i>gravida</i> . |
| Body normally slender; cubital, radial, and gradates all pale; seven cubital | |
| cross-veins beyond divisory; palpi almost wholly black | <i>schwarzi</i> . |

***Chrysopa thoracica* Walk.**

This belongs to the *rufilabris* group, antennae pale, and veins partly dark, but sometimes there is very little dark. Venation much as in *rufilabris*; it is a stouter species, with broader pronotum; it lacks the red under eye that is found in *rufilabris*, but has more or less plainly in fresh specimens two transverse reddish bands across the face; the palpi are not marked with black (with black in *rufilabris*).

The wings are rather broader than in *rufilabris*, especially the southern form of *rufilabris* known as *attenuata*. The species is common in Porto Rico, and Hispaniola, less common in Cuba. Mr. G. B. Fairchild collected several specimens at Coconut Grove, Florida, in May and June.

***Chrysopa cubana* Hagen.**

Hagen recorded this species from Virginia in his original description; his specimens were lost. We have one from North Carolina and several from Little River, Florida (Moznette). It has the basal part of antennae dark, except the basal joint which is pale, but has a distinct dark stripe on the outer side. The cross-veins are largely dark; the two rows of gradates, about five and eight, are parallel and close together; the divisory veinlet ends beyond the cross-vein above, and six cross-veins beyond it; the post-cubital area not one-half wider than the cubital area. The pronotum is hardly as long as broad, and often has a reddish stripe near the margin.

***Chrysopa cubana* var. *sanchezi* Navas.**

This differs from the type in lacking the dark stripe on the basal joint, and this joint as well as the space above it is of a yellowish or rufous color. As in typical *cubana* there may be a reddish stripe near the lateral margin of pronotum. The venation is the same as in typical form, but often the cross-veins are not so dark.

This is the form I considered as *C. lateralis* Guerin in my Revision of *Chrysopidae*, p. 150. Guerin's species came from southern Mexico, had larger wings, much longer antennae, and evidently is a *Leucochrysa* or *Nodita*.

We have *C. sanchezi* from Biscayne Bay (Mrs. Slosson), Miami (Moznette), Coconut Grove 5 to 28 May (Fairchild), Orlando, 18 March (Fernald) and Lower Metacumbe Key, 30 June (Bates) all Florida. It is fairly common in Western Cuba.

***Chrysopa antillana* Navas.**

This goes in the *rufilabris* group; the antenna beyond the sixth or eighth joint is plainly a pale yellowish brown. There is a red stripe on the cheeks, and the palpi are marked with dark; there is also a red stripe each side on the pronotum, but in position different from all our other species, it is a little nearer to the median line than to the side margin.

The wings are moderately slender, tips slightly acute. Many of the cross-veins show more or less dark, particularly the radials and gradates. The gradates, about five and seven, are in subparallel rows, but wide apart, the inner much nearer to radial sector than to the outer row. The divisory veinlet ends beyond the cross-veins, and six cross-veins beyond it; the post-cubital area only a little wider than the cubital.

In hind wings nearly wholly pale greenish, the gradates partly dark, and here, as in fore wings the rows are far apart. The pronotum is nearly as long as broad, and the hind tibiae plainly a little fusiform.

Mr. M. Bates collected one specimen on Lower Metacumbe Key, Florida, 30 June.

***Allochrysa virginica* var. *ocala* n. var.**

Differs from typical form in having a red stripe under each eye and a curved red line over the base of antennae; in fore wings the radial cross-veins are partly dark, the outer gradates dark; at last cubital cross-vein is a dark spot larger than in typical form, a dark spot at base of stigma distinct in both wings. On the mesonotum is a black spot at base of each fore wing, and a red spot each side on the anterior lobe. The basal part of the divisory cell is longer and more oblique than usual in *virginica*.

From Lloyd Sink, Jefferson Co., Florida, 9 Aug. (G. Fairchild). Type M. C. Z. No. 23184.

***Allochrysa californica* Navas.**

Revista R. Acad. Cien. Nat. Madrid XXV, 36, 1928.

This is said to be from California, but the description gives no differences from *A. virginica* except slight venational ones of no specific value; possibly a wrongly labeled *virginica*. My *A. arizonica* has both series of gradates dark, a red band connecting fore wings, red marks above base of antennae, not mentioned in the description of *californica*.

DESCRIPTIONS OF THREE NEW SPECIES OF AGABUS FROM HUDSON BAY. (COLEOPTERA: DYTISCIDAE).

BY HUGH B. LEECH,

University of California, Berkeley, Calif.

***Agabus hudsonicus* n. sp.**

A small (6-7 mm.) brownish testaceous species, with semi-transparent elytra and pronotum, and narrow metasternal lobes. It has somewhat the facies of *colymbus* described in this paper, but is not closely allied to it or to any described North American species.

Head rufo-testaceous, with basal median piceous spot which extends as an arm diagonally toward anterior margin of each eye. Pronotum rufo-testaceous, semi-transparent, piceous along anterior margin, and medially at base. Elytra brownish testaceous, paler toward margins of anterior half, the folded wings showing clearly beneath. Antennae and palpi rufo-testaceous, segments infusate apically; legs rufo-testaceous, metatibiae darker. Mesosternum, metasternum, metacoxal plates, and sternites anteriorly, piceous; metacoxal processes, and sternites posteriorly, paler. Epipleura testaceous.

Male:—Length 6.25 mm.; width 3.10 mm. All antennal segments slightly longer than broad. Head finely reticulate, meshes unequal. Pronotal reticulation similar to that of head, meshes slightly coarser; anterior series of punctures continuous; marginal bead moderate, wider posteriorly. Elytral surface shining, reticulation fine, lightly impressed, the meshes unequal, coarser than those of pronotum, with punctures as large as the smaller meshes irregularly throughout; longitudinal series of coarse hair-bearing punctures distinct, placed as follows: sutural, discal, subhumeral, humeral, marginal.

Prosternal process narrow, weakly carinate, acuminate at tip, surface reticulate and sparsely pubescent. Metasternal sulcus narrow. Shortest distance between mesocoxa and metacoxal plate slightly more than one-quarter width of latter, measured along same line.

Pro- and mesotarsi moderately dilated, first three segments clothed beneath with flattened hairs. Anterior protarsal claws broader and straighter than their fellows, sinuate on lower margin; meso- and metatarsal claws simple. Profemora each with a dense patch of projecting golden hair extending along ventral margin from trochanter to outer third. Hind tibiae each without a row of punctures along posterior margin of lower face; a few discal punctures anteriorly. Basal metatarsal segments each with two rows of spinose punctures along lower margin, inner row shorter.

Male genitalia: Median lobe about as long as parameres, narrow, gradually tapering toward apex, slightly twisted to right apically (Fig. 3, B. C.) Parameres: strongly chitinised, with a small elongate apical appendage (Fig. 3, A.).

Female:—similar to male; pro- and mesotarsi, protarsal claws and profemora unmodified.

Holotype:—♂, Churchill, Manitoba, July 7, 1937, (W. J. Brown). No. 4355 in the Canadian National Collection.

Allotype:—♀, same data, July 1. In the Canadian National Collection.

Paratypes:—3 ♂, same data, June 23, July 1, August 18; 1 ♀, same data as holotype. Distributed as follows: 1 ♂, 1 ♀, Canadian National Collection; 1 ♂ California Academy of Sciences; 1 ♂, author's collection.

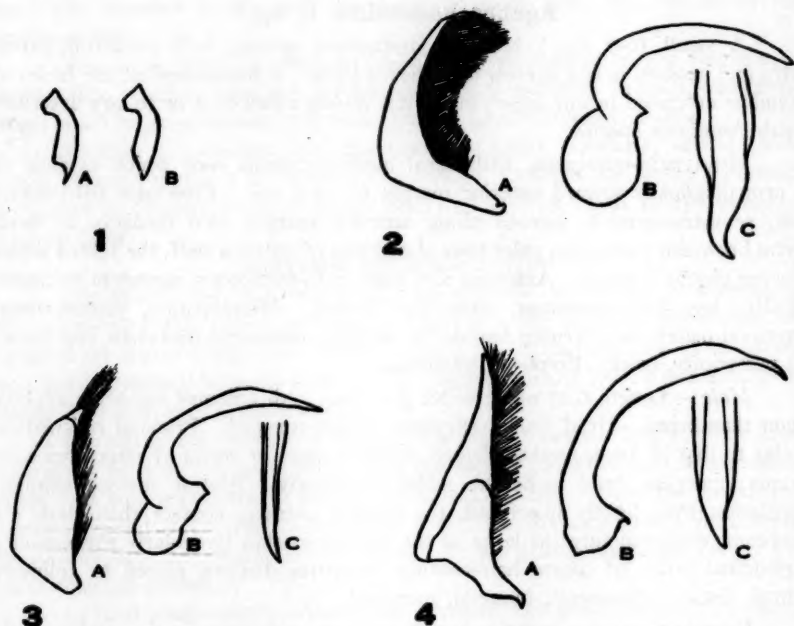


Fig. 1.—*Agabus colymbus* n. sp., anterior protarsal claw (A) typical, (B) modified. Fig. 2.—*A. colymbus* n. sp., male genitalia. Fig. 3.—*A. hudsonicus* n. sp. Fig. 4. *A. browni* n. sp. (A) right paramere, outer side. (B) median lobe (aedeagus) lateral; the upper (convex) margin of each figure is the true ventral side, from which the intromittent organ is everted in coition. (C) apical half of aedeagus, ventral view, showing median groove from which the intromittent organ is everted.

This species belongs to *Eriglenus* Thoms., and is the first to be recorded from our fauna. *Eriglenus* has been variously treated as a distinct genus, or a subgenus of *Agabus*, by European writers; the latter course seems preferable. Of the six previously described species, all are Palaearctic; a key is given by Zimmermann and Gschwendtner (1935:71). *Hudsonicus* is closest to *labiatus* Brahm, of which I have both sexes for comparison; *labiatus* is rufo-piceous to piceous, more broadly ovate, and has the pronotal marginal bead twice as wide as in *hudsonicus*. It is possible that all my examples of *hudsonicus* may be slightly teneral; two of the paratypes are testaceous, and might run to *luteaster* Zaitz. in the key, the main division of which is based on color. The description of *luteaster* (Eastern Siberian, Werchojansk) given by Zimmerman, is taken from Zaitzev; it does not mention the male sexual characters, and presumably was based on females. It is possible that the Hudson Bay specimens are *luteaster* (Siberia), but until this can be proved, it seems best to give our material a name.

***Agabus colymbus* n. sp.**

A small (6-7 mm.) aeneous species, facies of *punctulatus* Aube; head, pronotum and elytra shining in the male, pronotum and elytra dull in the female.

Head piceous; clypeus, labrum, area above bases of antennae, and a spot on each side of middle at base, testaceous. Pronotum piceous, pale testaceous laterally; in some specimens the piceous area is limited to the anterior and posterior margins, and a spot of variable size discally on each side of middle. Elytra of male piceous, testaceous laterally and narrowly along base, slightly aeneous; of female fuscous, paler laterally and along base, more strongly aeneous. Antennae and palpi testaceous, segments (especially terminals) infusate apically. Legs pale testaceous to testaceous, metatarsi darker. Underside rufo-piceous to rufo-testaceous, paler medially. Epipleura pale testaceous.

Male:—Length 6.5 mm.; width 3.25 mm. Head shining, reticulation lightly impressed, meshes unequal. Pronotum shining, reticulation similar to that of head; anterior series of punctures narrowly interrupted at middle; pronotum with a low tumid area on middle of each side, about in line with inner margins of eyes; marginal bead as in *punctulatus*; posterior border of pronotum sinuate at each side of middle. Elytra shining, meshes of reticulation a little smaller and more deeply impressed than those of head and pronotum; scattered punctures occurring for the most part at intersections of meshes; the usual serial punctures present, not conspicuous.

Prosternal process short, bluntly pointed, narrowly margined, sparsely finely punctate and pubescent, subcarinate along median line; shortest distance between mesocoxa and metacoxal plate slightly less than one-half width of latter, measured along same line. Pro- and mesotarsi moderately dilated, first three segments each bearing a pad of hairs which are broadened and flattened apically to form small pallettes; first segment of each pro- and mesotarsus more than twice as long and wide as second, third, fourth and fifth progressively narrower than second. Protarsal claws short, the anterior one of each pair very broad almost to apex, thence obtusely truncate, apex acute. Metacoxal lines not or indistinctly attaining posterior border of metasternum. Metatibiae each with a longitudinal series of punctures paralleling ventral margin of anterior face. Basal segments of metatarsi each with two rows of spinose punctures along ventral edge, inner row shorter.

Male genitalia:—Median lobe enlarged basally, dorso-ventrally compressed, sinuate and twisted to right in apical third, tip rounded (Fig. 2, B.C.). Parameres tapering to a point, densely pubescent along concave margin, the surface with a series of elongate subparallel rugae (Fig. 2, A.).

Female:—Length 6.15 mm.; width 3 mm. Meshes of reticulation smaller and more nearly equal than in male, those of elytra not elongate discally at base. Elytra, and to a lesser extent the pronotum, with a minute secondary reticulation. Pro- and mesotarsi unmodified.

Holotype:—♂, Churchill, Manitoba, June 23, 1937 (W. J. Brown). No. 4357 in the Canadian National Collection.

Allotype:—♀, same data, July 1. In the Canadian National Collection.

Paratypes:—Churchill, Manitoba (W. J. Brown), June 17: 1 ♂; June 23:

33♂♂, 11♀♀; June 29: 2♂♂, 4♀♀; July 1: 11♂♂, 4♀♀; July 7: 30♂♂, 33♀♀; July 8: 2♂♂; 1♀, August 18: 1♂. Churchill, Man. (O. Bryant, Hudson Bay, 1930. Trip, Lot 17, Van Dyke Collection), 2♂♂, 1♀♀, June 5, 1930. Four additional specimens (W. J. Brown) all males, have been examined; one of them has the left antenna 7-segmented. Paratypes distributed as follows:

60♂♂, 35♀♀ in the Canadian National Collection; 4♂♂, 4♀♀ in the California Academy of Sciences; 2♂♂, 2♀♀, to Dr. H. C. Fall; 2♂♂, 2♀♀ to Mr. R. Hopping; 2♂♂, 2♀♀ to Mr. J. B. Wallis; 2♂♂, 2♀♀ to the British Museum; 10♂♂, 6♀♀ in the author's collection.

Some of the paratypes are teneral, and hence lighter in color than the others. There is much variation in the shape of the anterior protarsal claws of the males; the claw may be almost squarely truncate apically, and not show the outer apical tooth at all, or the inner tooth may not be prominent (Fig. 1A, B.); intermediate conditions occur between these and the typical form, and the two anterior claws may differ on the same beetle.

This species is most closely allied to *punctulatus* Aube. In the male of *colymbus* the pro- and mesotarsi are much more strongly dilated than in *punctulatus*. In the female of *colymbus* the elytra are very dull, the secondary reticulation being so strongly impressed as to almost obliterate the boundaries of the primary meshes; the primary meshes are not elongate basally on the disc. In *punctulatus* females the secondary reticulation does not obliterate the primary, and the meshes of the latter are elongate, especially basally on the disc.

There is enough variation in the shape of the male anterior protarsal claws in both *colymbus* and *punctulatus*, to invalidate the use of that character in separating the two species.

***Agabus browni* n. sp.**

A rather large, elongate species (8-9 mm.), facies of *ambiguus* Say.

Head black, clypeus and a spot at each side of middle at base testaceous, labrum narrowly rufo-piceous anteriorly. Pronotum black, slightly aenescant, paler at anterior angles and along marginal bead. Elytra fuscous, progressively paler laterally. Antennae testaceous, segments, infusate apically. Palpi testaceous, ultimate segments usually darker. Legs rufo-testaceous, femora clouded with piceous. Prosternum and its process, meso- and metasternum, metacoxal plates, and sternites except along posterior margins, black. Epipleura testaceous.

Male:—Length (anterior margin of head to elytral apices) 9 mm.; width 4.5 mm. Head reticulate, meshes small and unequal. Meshes of pronotal reticulation slightly larger than those of head, more elongate discally, smaller and very dense laterally; anterior series of punctures not interrupted medially; lateral bead fine. Meshes of elytral reticulation smaller and less elongate than those of head or pronotum; the usual series of coarser punctures hardly apparent.

Prosternal process narrow, elongate, narrowly margined, smoothly convex, bluntly pointed apically; surface finely irregularly punctate. Metasternal sulcus well developed, deep and rather narrow. Metasternum impressed along median line from sulcus to posterior margin; metacoxal lines strongly impressed, strongly divergent, straight in anterior half and attaining posterior metacoxal border.

Shortest distance between mesocoxa and metacoxal plate slightly more than one-third width of latter, measured along same line.

Pro- and mesotarsi moderately dilated, first three segments each bearing a pad of rather sparse hairs which are dilated apically to form small pallettes; protarsal claws similar, as long as ultimate tarsal segment, slightly sinuate, anterior claw of each pair narrower and more strongly curved apically. Hind tibiae each with a series of punctures along lower margin of anterior face, the individual punctures irregular as to size and spacing; no discal punctures. Basal segments of metatarsi each with two rows of spinose punctures along lower margin, inner row shorter than outer.

Male genitalia: Median lobe longer than parameres, strongly narrowed apically in profile, tip turned upward and slightly to right; groove on ventral (convex) side widely open in apical half (Fig. 4, B, C.). Parameres: strongly chitinised basally, membranous in outer half, (Fig. 4, A.).

Female: Length 8.75 mm.; width 4.15 mm. Similar to male, but lacking modifications of pro- and mesotarsi.

Holotype: ♂, Churchill, Manitoba, July 1, 1937 (W. J. Brown), No. 4356 in the Canadian National Collection.

Allotype: ♀, same data, June 29. In the Canadian National Collection.

Paratypes: same data as type, 7 ♂♂, 4 ♀♀, August 18; 1 ♂ August 14; 1 ♀ July 1; 1 ♂ July 7. Paratypes distributed as follows: 4 ♂♂, 3 ♀♀ in the Canadian National Collection; 1 ♀ in the California Academy of Sciences; 1 ♂ to Dr. H. C. Fall; 1 ♂ to Mr. J. B. Wallis; 1 ♂ to the British Museum; 1 ♂ to Mr. R. Hopping; 1 ♂, 1 ♀ in the author's collection.

Browni runs in Fall's key to *anthracinus* Mannerheim, from which it can readily be separated by its pale epipleura. However both these species seem to be much more closely related to *ambiguus* Say and its allies, than to the species of the *nigroaeneus* Erichson section of Fall's key. The serial punctures close to and paralleling the lower anterior margin of each metatibia are variable, both as to the length of the series and the spacing of the individual punctures, in *strigulosus* Crotch, *ambiguus*, *erythropterus* Say, *anthracinus* and *browni*; the character is not a suitable one on which to separate out the last two species. In *austini* Crotch the serial punctures are reduced to three or four at the base, and there is very little variation shown. *Browni* (both sexes) may be separated from all of the above mentioned species except *austini* by its testaceous epipleura, and from *austini* by the much finer dorsal reticulation and the rounded tip of the prosternal process (acuminate in *austini*). It is a pleasure to dedicate this interesting species to Mr. W. J. Brown, who very generously submitted to me for study the new species described in this paper.

REFERENCES

- Fall, H. C. 1922. A Review of the North American species of *Agabus*, together with a description of a New Genus and species of the Tribe Agabini, Mount Vernon, N. Y., J. D. Sherman. 1-36.
Zimmerman, A. and Gschwendtner, L. 1935. Monographie der palaarktischen Dytisciden. VI. Colymbetinae. Koleopt. Rund, 21: 61-92.

NOTES ON CERTAIN OF WALSLINGHAM'S SPECIES OF OIDAEMATOPHORUS WITH DESCRIPTIONS OF NEW SPECIES
(PTEROPHORIDAE)*.

BY J. MCDUNNOUGH,

Ottawa, Ont.

For some time I have doubted whether the existing determinations of certain of Walsingham's species of plumes, based on the revision of this family by Barnes and Lindsey, were correct. Through the kind offices of Messrs. Tams and Stringer of the British Museum of Natural History I have been furnished with drawings of the left claspers of the male genitalia of a number of Walsingham's types in the genus *Oidaematophorus*; a study of these drawings in connection with my own slide material has confirmed my suspicions and shown that in at least two cases there had been misidentifications by the above-mentioned authors. With a view to clarifying the situation somewhat in this extremely difficult group I offer the following notes.

Oidaematophorus occidentalis Wlshm. In a previous discussion of this species (1936, Canadian Entomologist, LXVIII, 63) I pointed out (1) that the type specimen was of a distinctly tawny coloration and (2) that there was a possibility of two closely allied species being involved, basing my theory on the fact that larvae found on *Balsamorhiza* showed slight differences in the setae of their pupal cases from those taken feeding on *Grindelia* and that in the resulting imagoes there also appeared to exist certain small differences in wing-coloration and male genital characters. Since writing the above a few specimens have been received from Fernie, B. C. (H. Leech), bred from an *Aster* sp., which agree with the *Grindelia* feeder.

From a study of the drawing of the left clasper of Walsingham's male holotype I should be inclined to consider the *Grindelia* and *Aster* feeders as agreeing best with this holotype and the fact that the wing-coloration is tawnier than that of the *Balsamorhiza* feeder would also point in the same direction. In the strict sense, therefore, the name *occidentalis* Wlshm. (with probably *californica* Grin. as a synonym) must be applied as above indicated. Whether the *Balsamorhiza* feeder represents a distinct species or a phytophagic form is a matter I do not feel competent at the present time to decide; much more larval material and the resulting adults must be studied before arriving at a definite opinion.

Oidaematophorus guttatus Wlshm. This species has been misidentified by Barnes and Lindsey. They seem, judging by their text, to have been misled by Meyrick's comparisons with the types in the British Museum for as a matter of fact their first idea that the species was equal to *matheviianus* Zell. comes very close to being correct. The drawing of the left clasper of Walsingham's type shows a structure very similar to that found in *matheviianus* Zell. and *downesi* McD. as figured in my paper (1927, Trans. Roy. Soc. Can. Sec. V, 185, Pl. I, figs. 12, 13)—possibly rather closer to the latter than to the former. I have set aside a few specimens from Los Angeles Co., Calif. under this name as they seem to fit in fairly well with Walsingham's figure, the forewings being rather unicolorous

*Contribution from the Division of Entomology (Systematic Entomology), Department of Agriculture, Ottawa.

light fawn-brown, darker than *mathewianus*, and without the contrasting dark, triangular patch between costa and base of cleft found in *downesi*. The actual relationship of these three names, however, will have to wait until such time as the larvae and their food-plant are known. It might be noted that the abdomen of Zeller's male type of *mathewianus* in the British Museum has been destroyed to such an extent as to make it impossible to prepare a genitalic slide from it, so no comparisons of the genitalia of the two types is possible.

For the species heretofore passing under the name *guttatus* Wlsh. a new name is necessary and I describe this species as follows:

***Oidaematophorus phaceliae* n. sp.**

Oidaematophorus guttatus Barnes and Lindsey (nec Walsingham), 1921, Cont. N. Hist. Lep. N. Am. IV, No. 4, 388, Pl. XLV, fig. 16, Pl. LI, fig. 5; McDunnough, 1927, Trans. Roy. Soc. Can. Sec. V, 185, Pl. II, fig. 5; *id.*, 1936, Can. Ent. LXVIII, 65.

Male. Palpi and front smoky brown; head between and behind antennae whitish; collar deep brown. Thorax largely creamy, crossed by a dark brown band in posterior portion. Abdomen dark brown shaded heavily with white dorsally on first three segments. Legs moderately tufted, brown, the tarsi white with each apical section brown; mid and hind tibiae ringed with white behind the apical spurs which are also largely whitish. Primaries deep fawn-brown, heavily sprinkled with white and smoky scaling, the former color predominating in basal portion of wing. A dark spot at base of cleft, shaded outwardly rather prominently with white; a dark dash above this on costa, connected with the spot at base of cleft by the usual dark shading, forming a quite prominent triangular patch. The costal dash is preceded and followed by white streaks beyond which, in the outer portion of the first lobe are two small, dark costal spots and a longer streak, the latter cutting the white costo-apical fringes; a small, subapical, dark spot on inner margin of lobe; fringes on inner margin of lobe smoky, with the exception of a narrow white streak arising from the dark subapical spot. Second lobe largely fawn-brown with slight black sprinkling and with several faint dark dots along outer margin; fringes smoky in cleft, white along outer margin with dark basal line and smoky suffusion below apex and at anal angle, along inner margin pale smoky. Secondaries smoky brown with pale smoky fringes.

Female. Very similar to male, somewhat more heavily marked, with traces of a dark longitudinal streak through first lobe of primaries, which at times also occurs in the males. Expanse, 25 mm.

Holotype—♂, Waterton Lakes, Alta., July 20, 1923, (J. McDunnough). Bred from *Phacelia heterophylla*, No. 4375 in the Canadian National Collection, Ottawa.

Allotype—♀, same data.

Paratypes—5 ♂, 1 ♀, same data, July 19-25, 1923, all bred specimens.

There is a long series of specimens before me, bred from larvae on *Hydrophyllum virginianum*, secured in the vicinity of Ottawa, Ont., which I am not including in the paratype series although they seem identical with the western specimens; the detailed larval description already published was drawn up from this eastern material.

Oidaematophorus grisescens Wlsh. In the drawing before me of the left clasper of the type there is a distinct indication of a small basal loop to the harpe

but not nearly as deep as in Barnes and Lindsey's figure (Pl. 54, fig. 4). I have already had occasion to comment on the genitalia of our British Columbia specimens (1927, *op. cit.* 186, Pl. 1, fig. 15), and find, on a comparison of further slide material from this locality with the above-mentioned drawing, that the basal loop is apparently less developed in our Canadian specimens; in this respect they agree with specimens from Estes Park, Colo. from which several slides have been made and to which the synonym, *acrias* Meyr., would apparently apply. Specimens from northern California agree best with the drawing of the genitalia but there seems nothing in the maculation to warrant separation. I am, therefore, leaving the synonymy as worked out by Barnes and Lindsey.

Oidaematophorus inconditus Wlshm. Another of Barnes and Lindsey's misidentifications. The true species, judging by the drawing before me, must be very close to *caudelli* Dyar; the left harpe is, however, broader basally and narrows suddenly near the apex, forming a distinct elbow on the outer side. There is a single male specimen before me from Summerland, B. C. which I hold under this name; the veins in the terminal area of primaries, especially in the second lobe, are outlined with brownish, giving a distinct strigate appearance; this feature was mentioned by Walsingham in his original description.

The species on which Barnes and Lindsey at least partially based their determination of *inconditus* is apparently without a name. I describe it as follows:

***Oidaematophorus simplicissimus* n. sp.**

Male. Palpi, front and vertex of head light brownish with a broad pale creamy area on head between the antennae; palpi thin, pointed, of moderate length, projecting slightly beyond front. Thorax creamy with faint yellowish tinge. Abdomen whitish. Primaries pale creamy, shaded lightly with light brownish, more particularly in costal area, the inner margin and second lobe remaining pale. Fringes dull whitish with faint smoky tinge. No other maculation. Secondaries pale smoky white with paler fringes. Legs creamy, shaded with pale smoky.

Female. Essentially similar, at times with a slight general yellowish tinge. Expanse, 12-14 mm.

Holotype—San Diego, S. Calif., July 21, 1920; No. 4376 in the Canadian National Collection, Ottawa.

Allotype—same locality, July 20.

1

Paratypes—3 ♂, same locality.

Lindsey's figure of the left clasper (Plate 52, fig. 6) as *inconditus* Wlshm. matches that of the type specimen; as in *caudelli* the right clasper is considerably smaller.

In this complicated group of more or less unicolorous creamy or yellowish species from the southwestern area of the United States there appear to be several undescribed ones, separable only with certainty on male genitalic characters. Most of my material has reached me through the courtesy of Dr. J. Comstock of Los Angeles and Mr. and Mrs. J. Sperry of Riverside, Calif. whose trips into the desert regions have been so productive of interesting material. I append descriptions of these undescribed species.

***Oidaematophorus contortus* n. sp.**

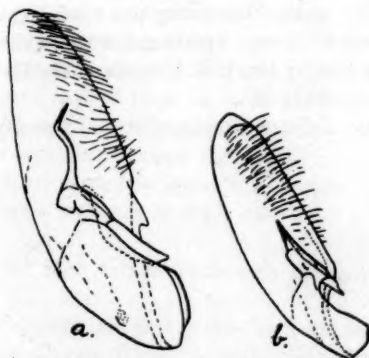
Palpi moderate, somewhat exceeding front, pale whitish. Head yellowish, with broad pale whitish area behind antennae. Antennae white, unbanded. Thorax and abdomen pale whitish yellow. Primaries dull whitish with a broad pale yellowish area extending along costa and occupying most of the first lobe. Veins on inner half of wing faintly outlined in pale brown. Fringes white. Secondaries pale smoky with still paler fringes, especially on third lobe. Beneath unicolorous pale smoky, costa outwardly narrowly yellowish; third lobe of hindwing paler, rather whitish. Legs whitish, fore and mid-tibiae and tarsi tinged with brown; spurs, especially of hind tibiae, long. The male genitalia are similar to those of *varius* B. & L. but the left harpe is rather longer and more twisted apically so that the point is directed towards the costa of clasper rather than towards the ventral margin. The right clasper is somewhat narrower but almost equal in length to the left one. Expanse, 20-22 mm.

Holotype—♂, Huachuca Mts., Ariz., June 2, 1935, (J. A. Comstock); No. 4377 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, May 26, 1935.

Paratypes—3 ♂, Oracle, Ariz., May 5, 1935. (G. and J. Sperry).

Varius B. & L. is slightly smaller than the present species and has a distinct grayish tinge with more definitely marked veins, especially in the first lobe of primaries; it lacks all traces of the yellowish costal suffusion found in the present species. *Subochraceus* Wlsh. and *australis* Grin. possess considerably shorter palpi.



Left Claspers of a. *Oidaematophorus contortus* n. sp.; b. *O. rigidus* n. sp.

***Oidaematophorus rigidus* n. sp.**

Scarcely separable from the preceding in coloration. Palpi pale ochreous, moderate, extending beyond head, third joint very pointed. Head brownish ochreous with broad pale band behind antennae which are whitish, unbanded. Thorax and abdomen pale whitish yellow. Primaries whitish with broad pale yellowish shading along costa and over most of first lobe; veins unmarked. Fringes concolorous. Secondaries almost concolorous with inner area of primaries, with very faint smoky tinge. Fringes pale. Beneath more faintly smoky

than in preceding species. Fore and mid legs more decidedly brownish than in *contortus*; hind legs pale whitish; spurs decidedly shorter than in preceding species, brown on mid legs, tipped with brown on hind legs. In the male genitalia the two claspers are subequal, distinguishing the species at once from *caudelli* Dyar; the left harpe is rather short with a stout basal half; narrowing rather abruptly to a short point, the whole straight (not twisted as in the preceding species) and pointing toward apex of clasper. Expanse, 22 mm.

Holotype—♂, Little Rock, Los Angeles Co., Calif., Apr. 23, 1935, (J. A. Comstock); No. 4378 in the Canadian National Collection, Ottawa.

Paratypes—1 ♂, Independence, Inyo Co., Calif., Apr. 22, 1933; 1 ♂, Red Rock Canyon, Los Angeles Co., Calif., Apr. 21, 1933, (J. Comstock).

The paratype from Red Rock Canyon shows little of the yellowish tinge along costa found in the other two specimens, but agrees genitally. Besides the above, two worn and stained males from Scoberg's Well, Calif., Apr. 22, 1935, (G. and J. Sperry) belong here on genitalia.

RESEARCH NOTES.

ROUNDWORM ATTACKING PEA MOTH

During the course of investigation of the pea moth, *Laspeyresia nigricana* Steph., on the Gaspé coast, observations showed that very severe mortality of the larvae may occur while they are in their cocoons in the soil. The indications were that some important parasite or predator might be exerting a powerful influence in reducing the pea moth population.

It now appears that a small species of roundworm can be held responsible for considerable mortality of the hibernating pea moth larvae. These roundworms belong to the genus *Neoapectana*. Specimens were recovered from St. Godfroi, P. Que., and were identified by Dr. J. R. Christie of the United States Department of Agriculture, Washington, D. C.

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